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3. Marine Archiannelids from Dominica [1]

By Ernst Kirsteuer [2]

This paper is based on collections made by the author on Dominica, B.W.I., during April 1966 from Middle Bay below the village of Marigot on the northeast coast of the island. Two species of archiannelids, *Saccocirrus archboldi*, new species, and *Protodrilus corderoi* Marcus, were found when sand samples were examined for psammobiontic nemerteans. Substrate samples were taken to a depth of 100 mm in the middle of the intertidal region and also from near low water line of the sandy beach. The substrate samples were placed together with sea water in pails, and after two to three days the surface layer of sand was examined for specimens with a dissecting microscope. In the samples from the midintertidal zone, both

[1] Other faunal studies in this series are: 1, Kier, Proc. U.S. Nat. Mus., 1966, vol. 121, no. 3577, pp. 1–9; 2, Stone, ibid., 1966, vol. 121, no. 3578, pp. 1–6. A companion series on the flora appears in the "Contributions of the United States National Herbarium."

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species of archiannelids were represented while in those samples from near the low water line only *Protodrilus corderoi* was found.

This investigation is a contribution of the "Bredin-Archbold-Smithsonian Biological Survey of Dominica" and I wish to express my thanks to Dr. Horton H. Hobbs, Jr., United States National Museum, for making my participation in the program possible. I am also indebted to Dr. Marian H. Pettibone and Dr. W. Duane Hope, USNM, for their comments and suggestive criticisms of the manuscript.

Genus *Saccocirrus* Bobretzky

Saccocirrus archboldi, new species

FIGURE 1

The new species is based on 11 specimens, five mature females and six immature specimens. The animals were studied alive but six worms (two females and four immature specimens) were fixed and later examined for futher details.

TYPES.—One whole mount with three specimens is deposited in the United States National Museum. Female holotype, and two immature paratypes, USNM 34709. One whole mount with three specimens is deposited in the American Museum of Natural History, New York. Paratypes, one female and two immature specimens, AMNH 3876.

TYPE-LOCALITY.—Middle Bay, Dominica, British West Indies.

The new species is dedicated to Mr. John D. Archbold, who has helped support the present survey on Dominica.

DESCRIPTION.—The living animals measure 4 to 6 mm in length (the tentacles not included) and approximately 0.2 mm in width. The animals have 60 to 84 segments. The color of the worms is a light yellowish white and the greenish intestine can be seen through the body surface. The two black eyes are comparatively large and easily discernible in life. They are situated near the base of the prostomial tentacles, the latter attaining a length of about 600μ in the longest of the specimens. The tentacles taper gradually toward their distal ends and are beset with sparsely scattered, rather stiff sensory cilia, which are more numerous on the anterior side. The posterior surface of the tentacles is corrugated even when held straight. Stiff sensory cilia also occur on the anterior margin of the prostomium, on the lateral sides of the body, and on the dorsal side of the anal lobes. The nuchal organs are small, elliptic, ciliated pits and are found immediately behind the tentacles (fig. 1*a*).

The achaetous peristomial segment is twice as long as the following setigerous segments. The mouth slit extends over the whole length of the peristomial region and is lined by lips having a very active

ciliation. Parallel with the mouth, the two elongated tentacle ampullae reach caudad to the middle of the peristomium (fig. 1*a*). The pharynx occupies the second and third segments and the esophagus

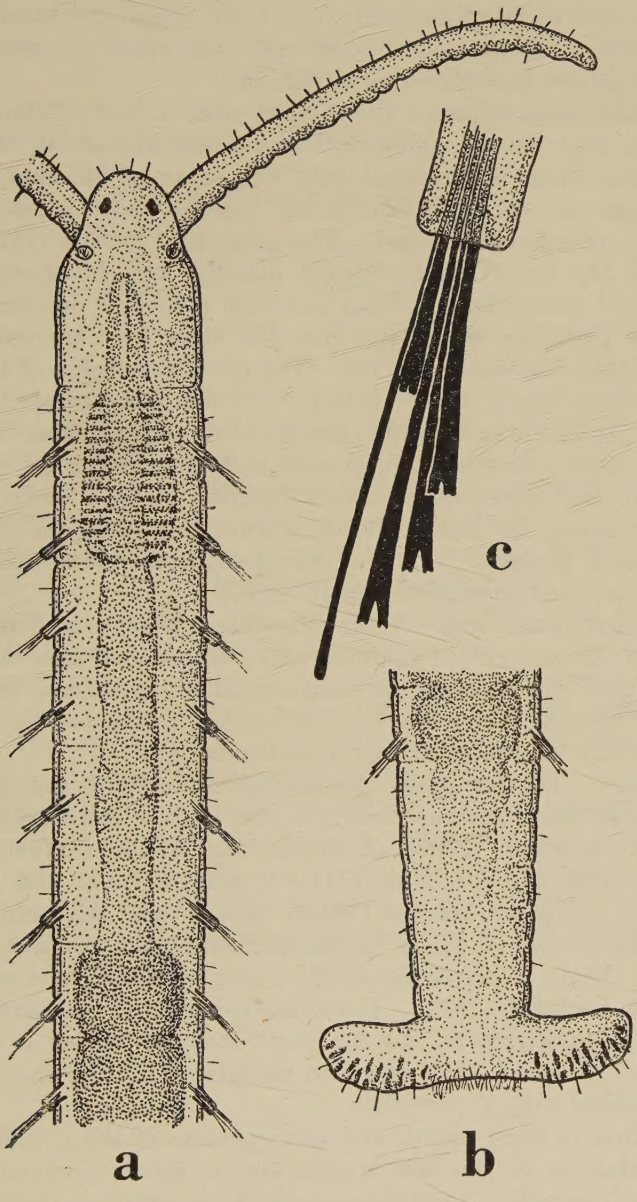

FIGURE 1.—*Saccocirrus archboldi*, new species: *a*, anterior region of a living animal in dorsal view; *b*, posterior portion of a living animal in dorsal view; *c*, parapodium with setae.

ends with the seventh segment. The following part of the alimentary tract shows (in living as well as in fixed specimens) intersegmental constrictions. It continues to the beginning of the achaetous and apodous posterior portion of the body, which comprises five to six segments and the pygidium. In this body region the intestine is a comparatively narrow and smooth tube that opens posteromedially on the pygidium in a ciliated area (fig. 1*b*).

Each setigerous segment is provided with a pair of dorsolateral parapodia that have a cylindrical shape and are about 80μ long. Each parapodium is furnished with five setae of different lengths. The longest seta (176μ) is flexible and hairlike and thickens slightly toward its rounded distal end. The other four bristles (152μ, 123μ, 98μ, and 74μ long) are broadened distally and bifurcated. The symmetrical prongs have a blunt end with a shallow depression (fig. 1*c*). The pygidium shows two rounded lobes that are moderately dorsoventrally flattened (fig. 1*b*). Though the margins of the lobes are somewhat wavy, there are no structures comparable with the adhesive papillae in some other species of this genus. Over the entire posterior aspect of the lobes, conspicuous gland cells are scattered that, with their secretion, obviously function as an adhesive device.

By examining the living mature worms, one finds the gonads in the segments posterior from the twenty-fifth or twenty-sixth to the beginning of the nonsetigerous body region.

DIAGNOSTIC FEATURES.—Yellowish-white worms, 4 to 6 mm long, with 60 to 84 segments; pygidium with two rounded anal lobes that have no cirri or demarcated adhesive papillae; cylindrical parapodia with five setae of which the longest one has a rounded tip and the other four are bifurcated at their distal ends.

REMARKS.—To the genus *Saccocirrus* Bobretzky the following species so far have been ascribed: *S. papillocercus* Bobretzky (1871), *S. major* Pierantoni (1907), *S. krusadensis* Alikunhi (1943, 1948), *S. minor* Aiyar and Alikunhi (1944), *S. cirratus* Aiyar and Alikunhi (1944), *S. gabriellae* Marcus (1946), *S. orientalis* Alikunhi (1946), *S. pussicus* Marcus (1948), *S. parvus* Gerlach (1953), and *S. maculatus* Tenerelli (1964). One unidentified species of *Saccocirrus* was mentioned by Berkeley (1936). It corresponds in the character of the setae to *S. papillocercus*, but the anal lobes are similar to those of *S. major*. Marcus (1946), however, considered Berkeley's specimens to be identical with *S. gabriellae*.

According to body length and configuration of the pygidium, the closest relatives of the new species are *S. parvus* Gerlach and *S. maculatus* Tenerelli. *Saccocirrus archboldi*, however, is distinguished from *S. parvus* by having longer and cylindrical parapodia with five setae, while in *S. parvus* the parapodia are short, conical protuberances

furnished with six setae. The type of setae is also different in these two species. In *S. parvus* the longest bristle is bifurcated and the other five bristles on each parapodium have broad and blunt tips; in *S. archboldi* the longest and hairlike seta has a round tip and the rest of the setae are distally bifurcated. *Saccocirrus maculatus* is clearly distinguished from *S. archboldi* by having only 26 segments and, further, by being marked with black dots, which are irregularly scattered over the greater part of the body surface but are so densely arranged on the pygidium that it looks black.

Genus *Protodrilus* Hatschek

Protodrilus corderoi Marcus

Protodrilus corderoi Marcus, 1948, pp. 5–7, figs. 11–16.

The nine specimens that were collected on Dominica agree in most details with the description given by Marcus (1948) for specimens from Brazil. The living worms are greyish in color, semitransparent, and attain a length up to 4 mm (in the Brazilian specimen, 6 mm) and a maximum width of 0.1 mm. Up to 37 segments are found in the present specimens. The head region is, under normal circumstances, only slightly wider than the rest of the body. In a squeezing preparation, however, the cephalic area becomes broadened and rounded in shape as was illustrated by Marcus (1948, pl. 3: fig. 11). The tentacles extend over 280μ and are irregularly beset with cilia. Cilia are found also on the tip of the prostomium, on the lateral and dorsal aspects of the body segments, and along the posterior border of the anal lobes. The nuchal organs are small ciliated pits situated posterior from the tentacles on the lateral sides of the head. There are no eyes, statocysts, or transverse bands of cilia.

The salivary glands extend posterior into the third segment in the smallest animal and into the seventh segment in the longest one. The two anal lobes have the same shape as was figured by Marcus (1948, pl. 3: fig. 12). In only two animals small ovocyts were found when studied alive. The other specimens were sexually immature.

Literature Cited

AIYAR, G. R., and ALIKUNHI, K. H.

1944. On some archiannelids of the Madras Coast. Proc. Nat. Inst. Sci. India, vol. 10, pp. 113–140.

ALIKUNHI, K. H.

1943. Note on the occurence of archiannelids at Krusadai together with a description of an undescribed species of *Saccocirrus*. Proc. 29th Indian Sci. Congr. Baroda 1942, pt. 3, p. 149.

1946. On a new species of *Saccocirrus* from the Madras beach. Curr. Sci., vol. 15, p. 140.

1948. On some archiannelids of the Krusadai Island. Proc. Nat. Inst. Sci. India, vol. 14, pp. 373–383.

BERKELEY, E.

1936. Occurence of *Saccocirrus* in Western Canada. Nature, London, vol. 137, p. 1075.

BOBRETZKY, N.

1871. *Saccocirrus papillocercus* nov. gen. n. sp. Mem. Soc. Nat. Kiew, vol. 1, pp. 211–259.

GERLACH, S. A.

1953. Zur Kenntnis der Archianneliden des Mittelmeeres. Kieler Meeresforsch., vol. 9, pp. 248–251.

MARCUS, E. DUBOIS-REYMOND

1946. On a new archiannelid, *Saccocirrus gabriellae*, from Brazil. Comm. Zool. Mus. Hist. Nat. Montevideo, vol. 2, no. 37, pp. 1–6.

1948. Further archiannelids from Brazil. Comm. Zool. Mus. Hist. Nat. Montevideo, vol. 2, no. 48, pp. 1–17.

PIERANTONI, U.

1907. Il genre *Saccocirrus* Bobr. e le sue specie. Ann. Mus. Zool. Univ. Napoli, n.s., vol. 2, no. 18, pp. 1–11.

TENERELLI, V.

1964. Su una associazione di policheti mesopsammici del Golfo di Catania. Boll. Accad. Gioenia Sci. Nat. Catania, ser. 4, vol. 8, fasc. 4, pp. 212–245.

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